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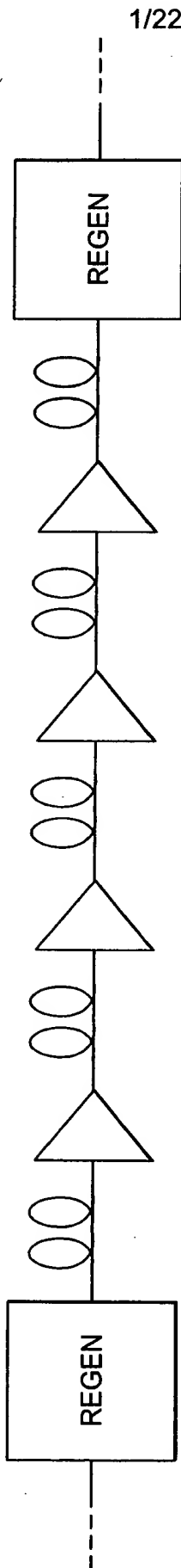
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100

OPTICAL
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FIG. 1



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200

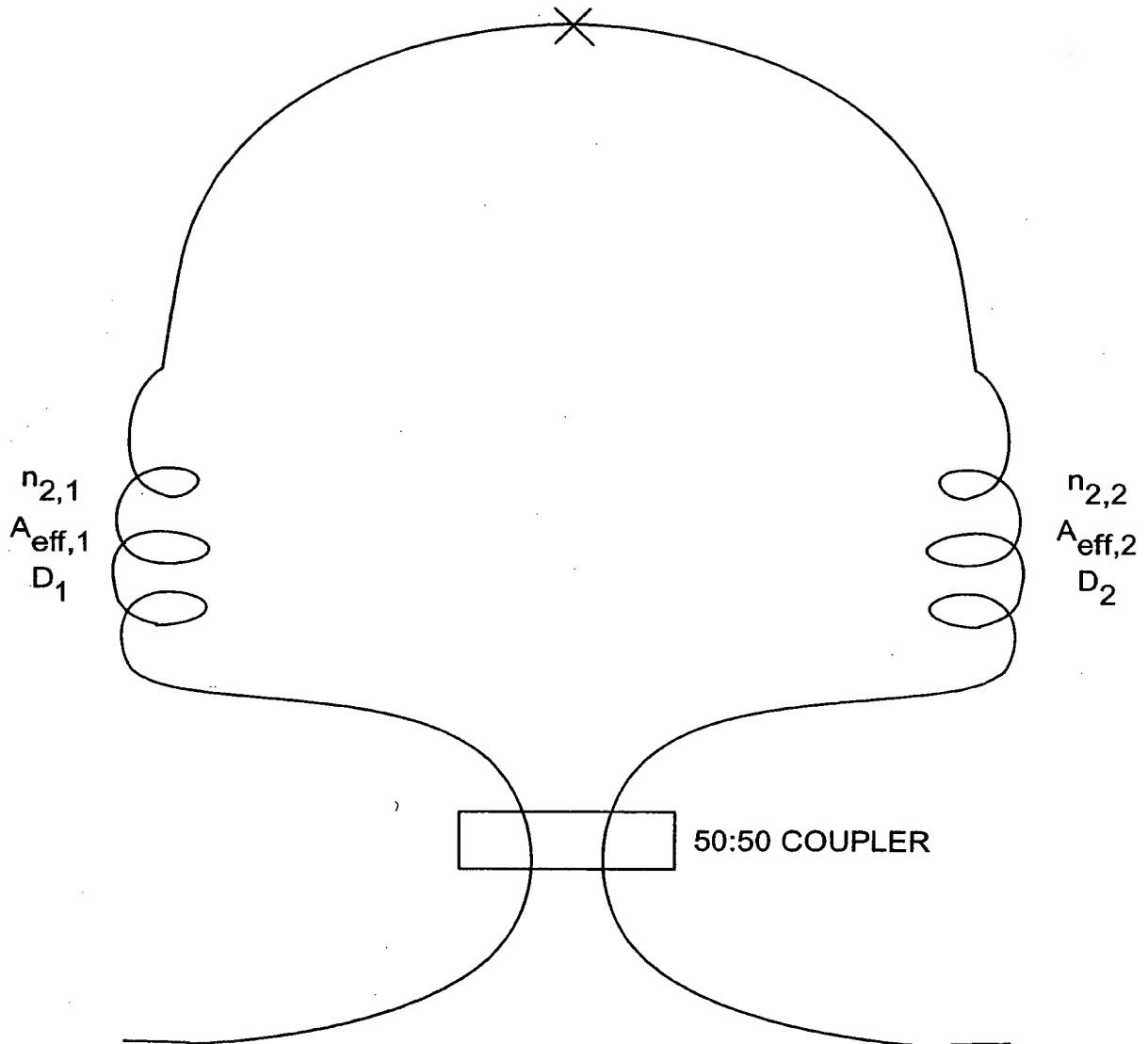


FIG. 2



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FIG. 3A

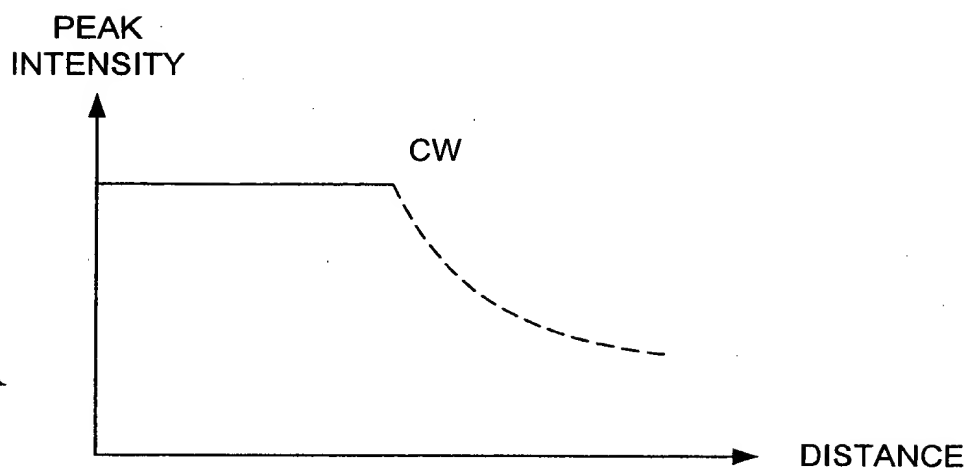


FIG. 3B

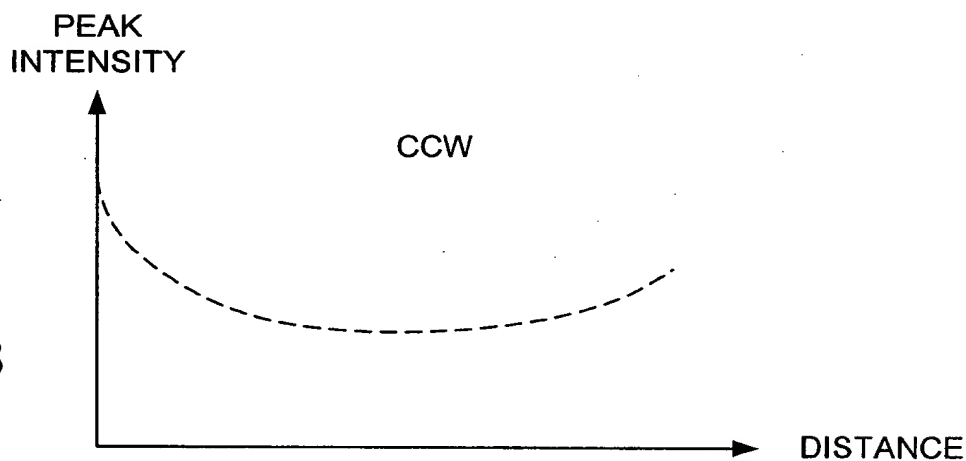
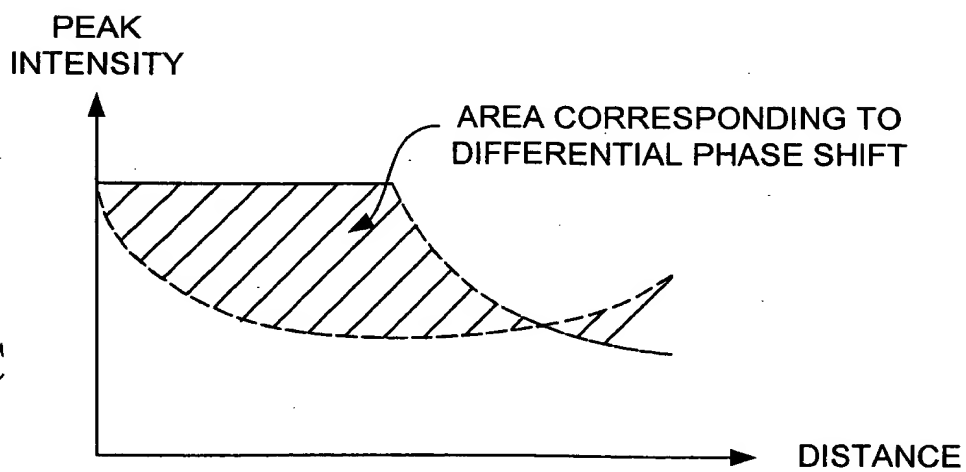


FIG. 3C





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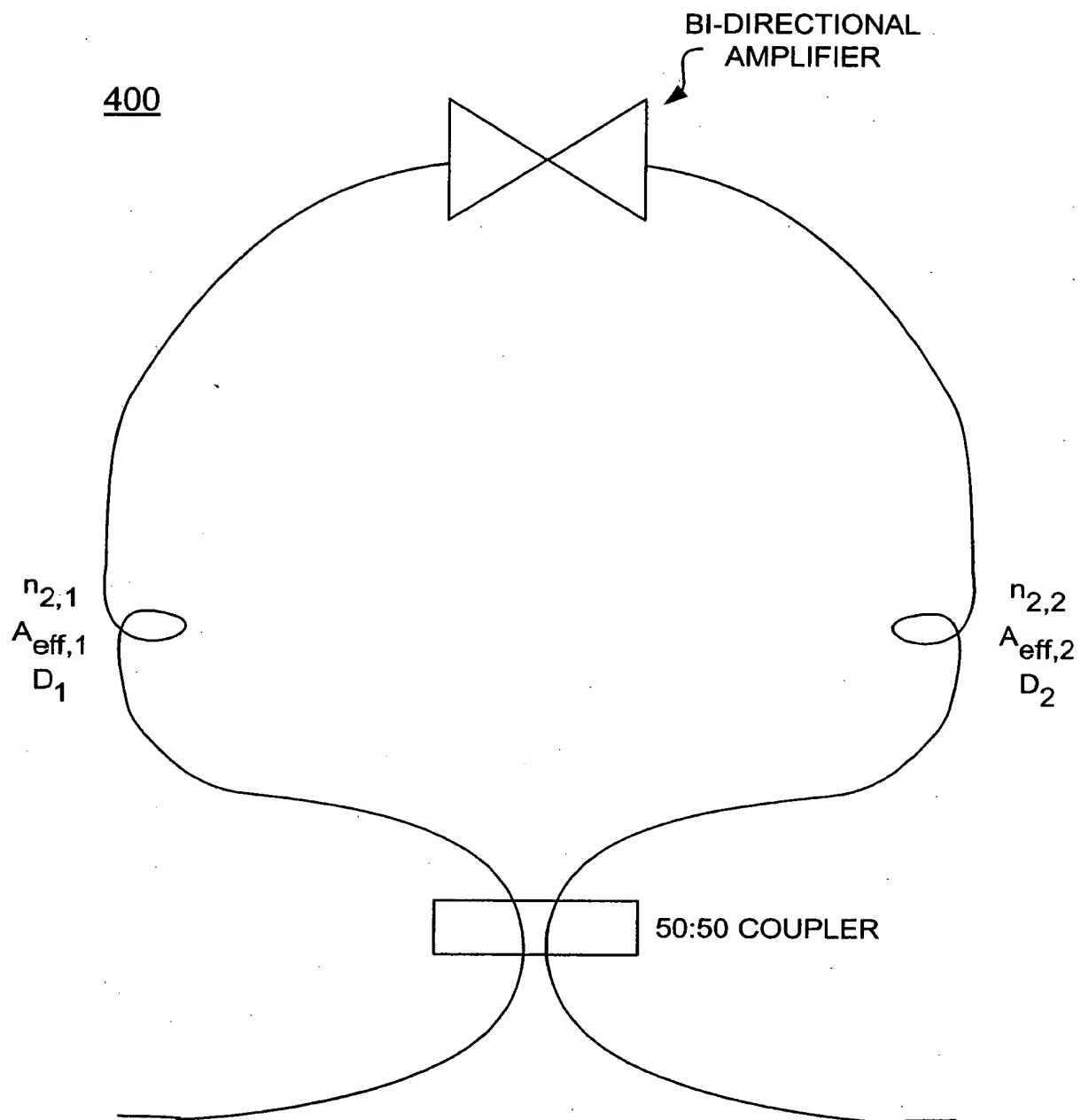


FIG. 4



500

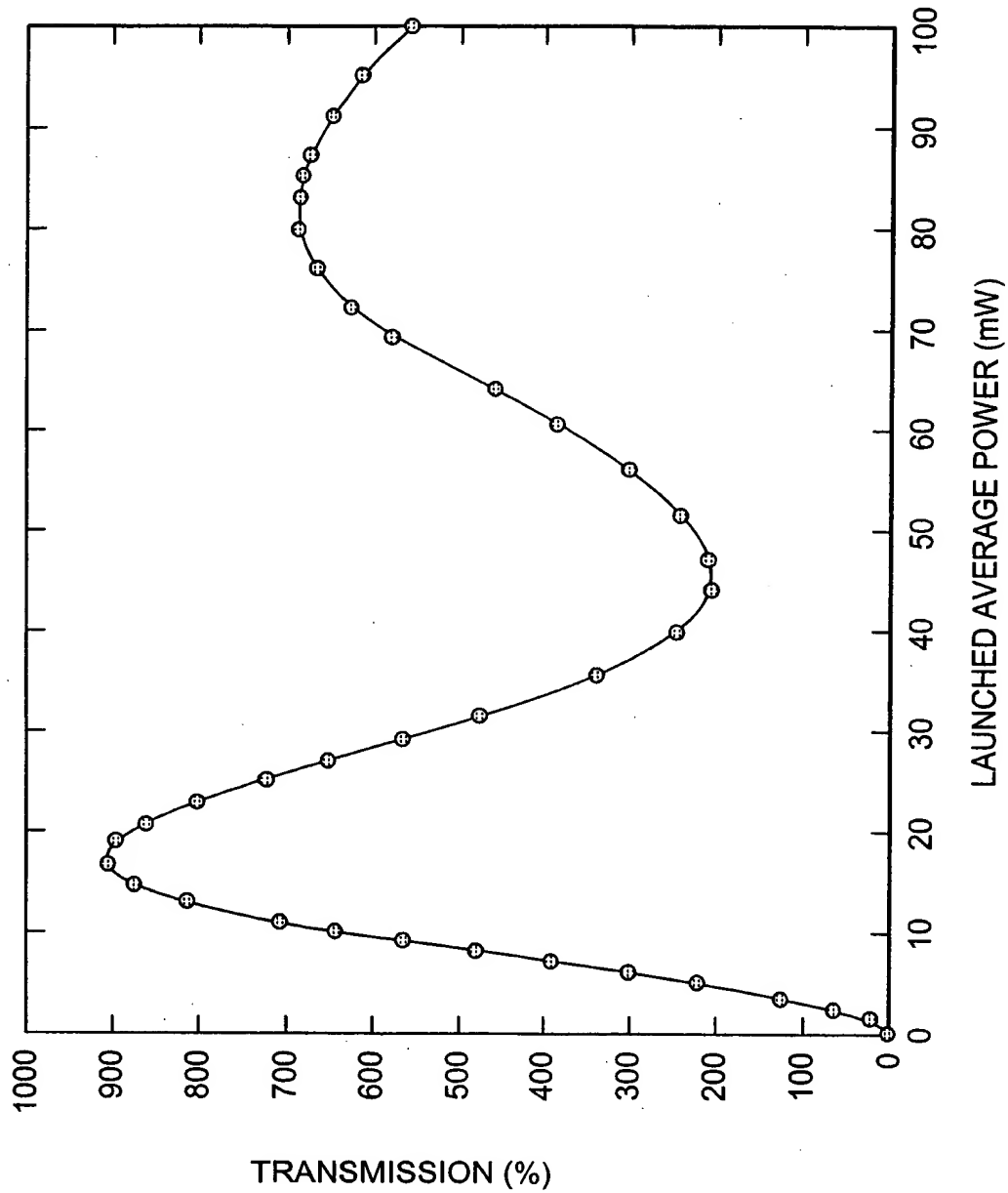


FIG. 5



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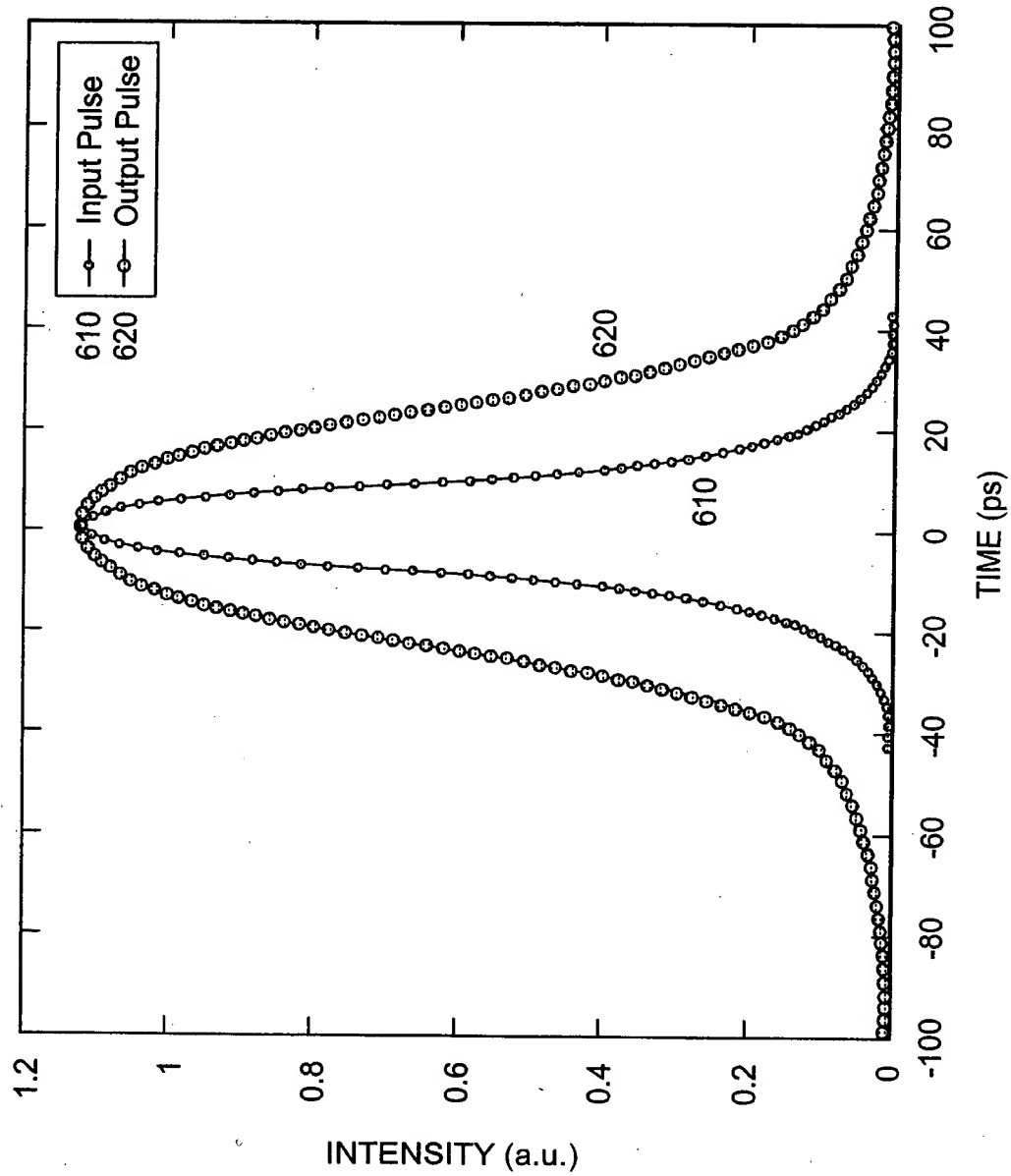


FIG. 6A

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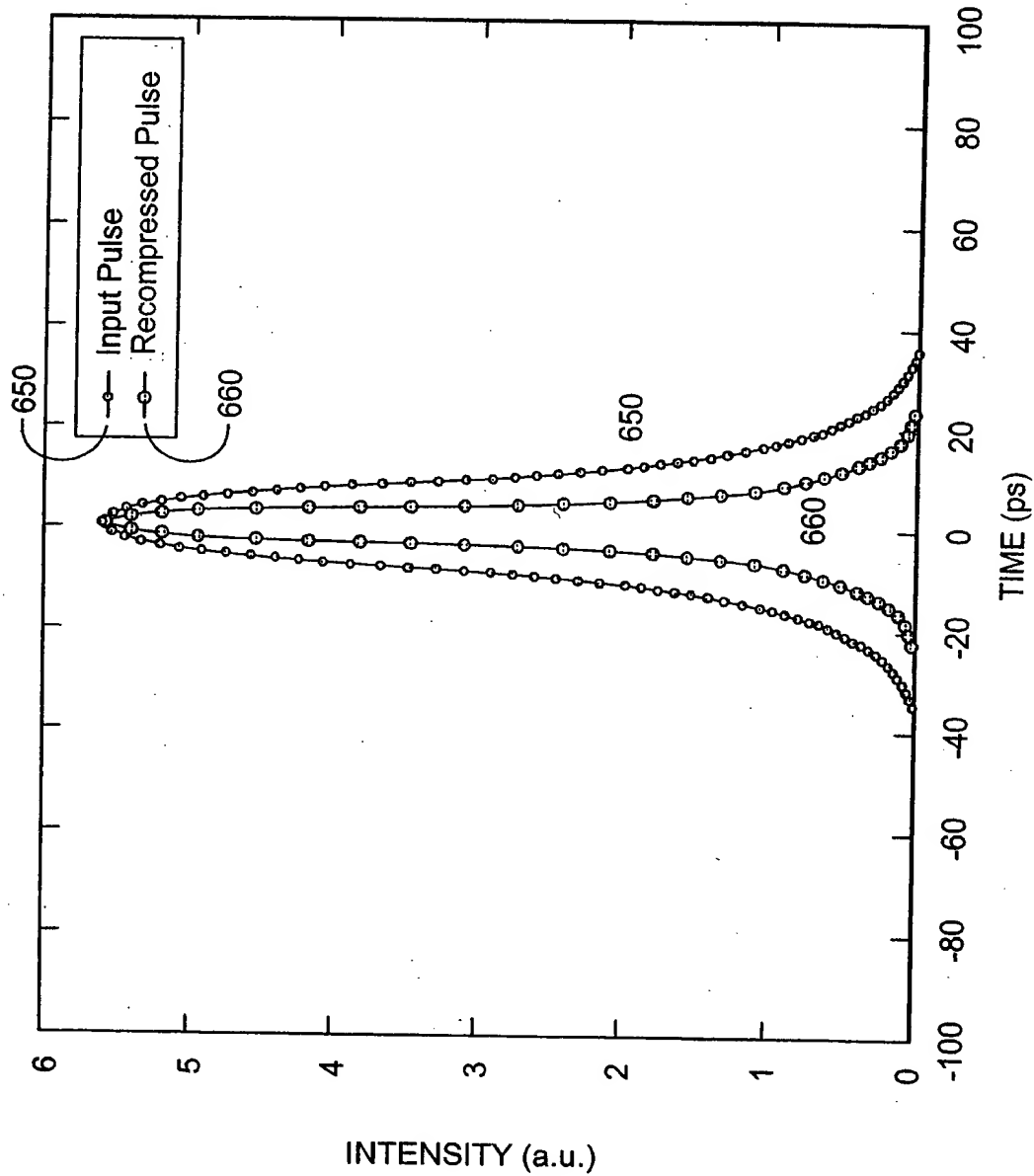


FIG. 6B



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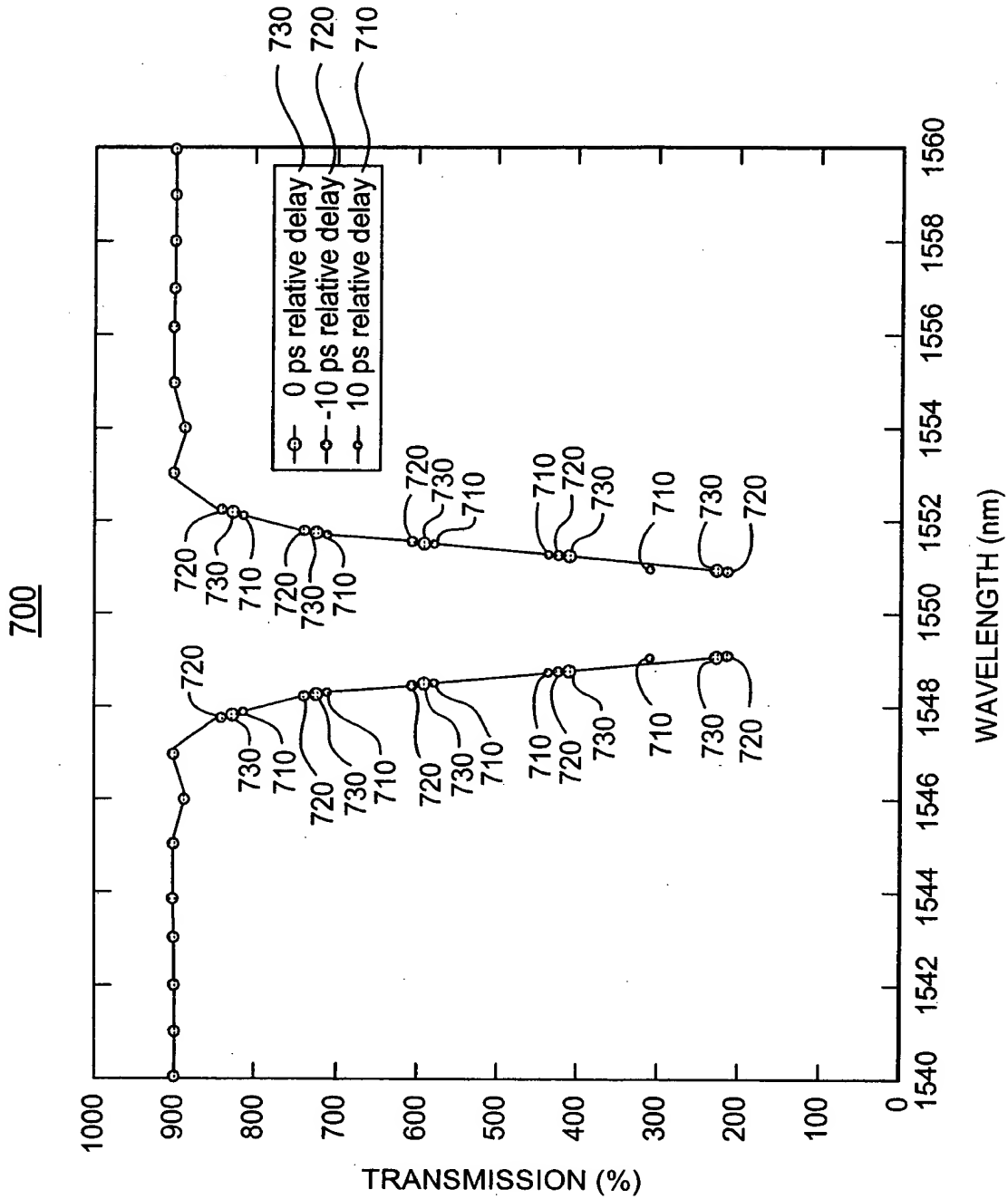


FIG. 7



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800

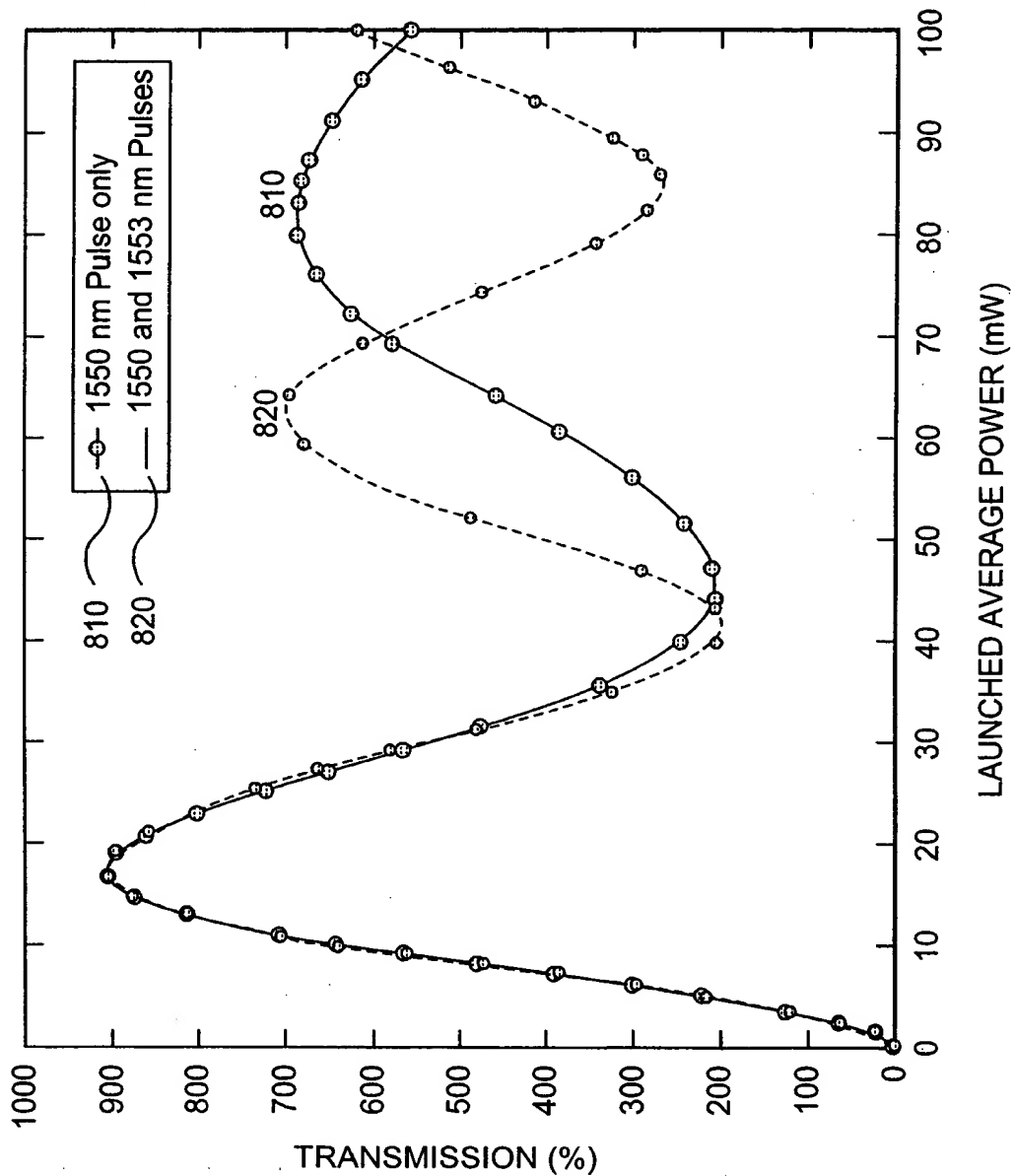


FIG. 8



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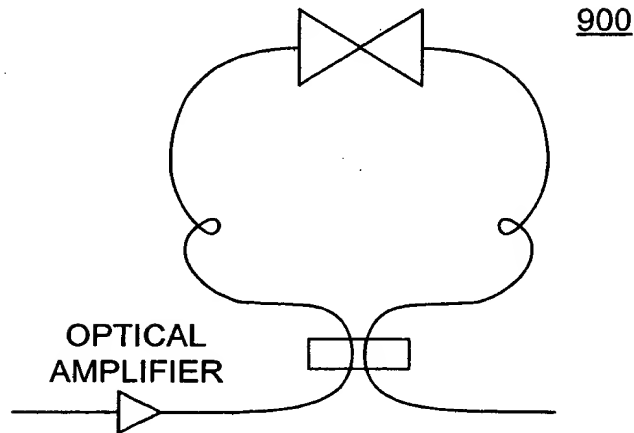


FIG. 9A

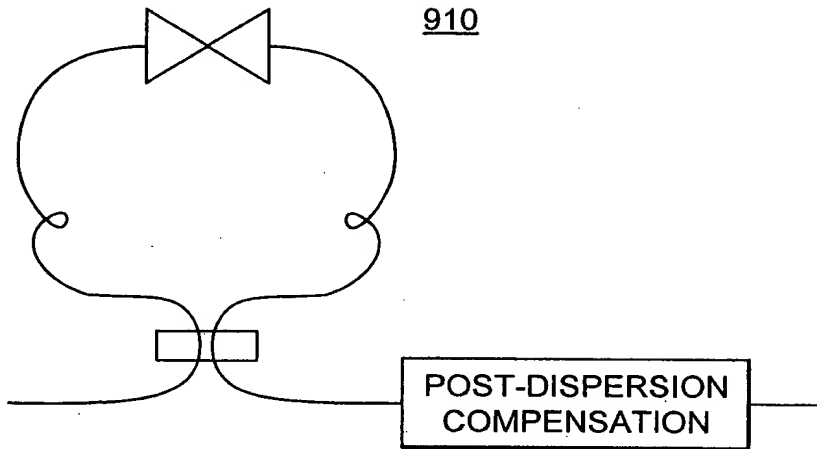


FIG. 9B

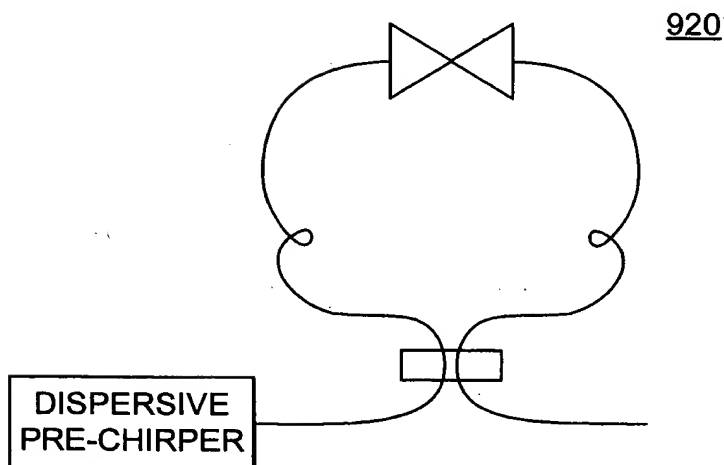


FIG. 9C



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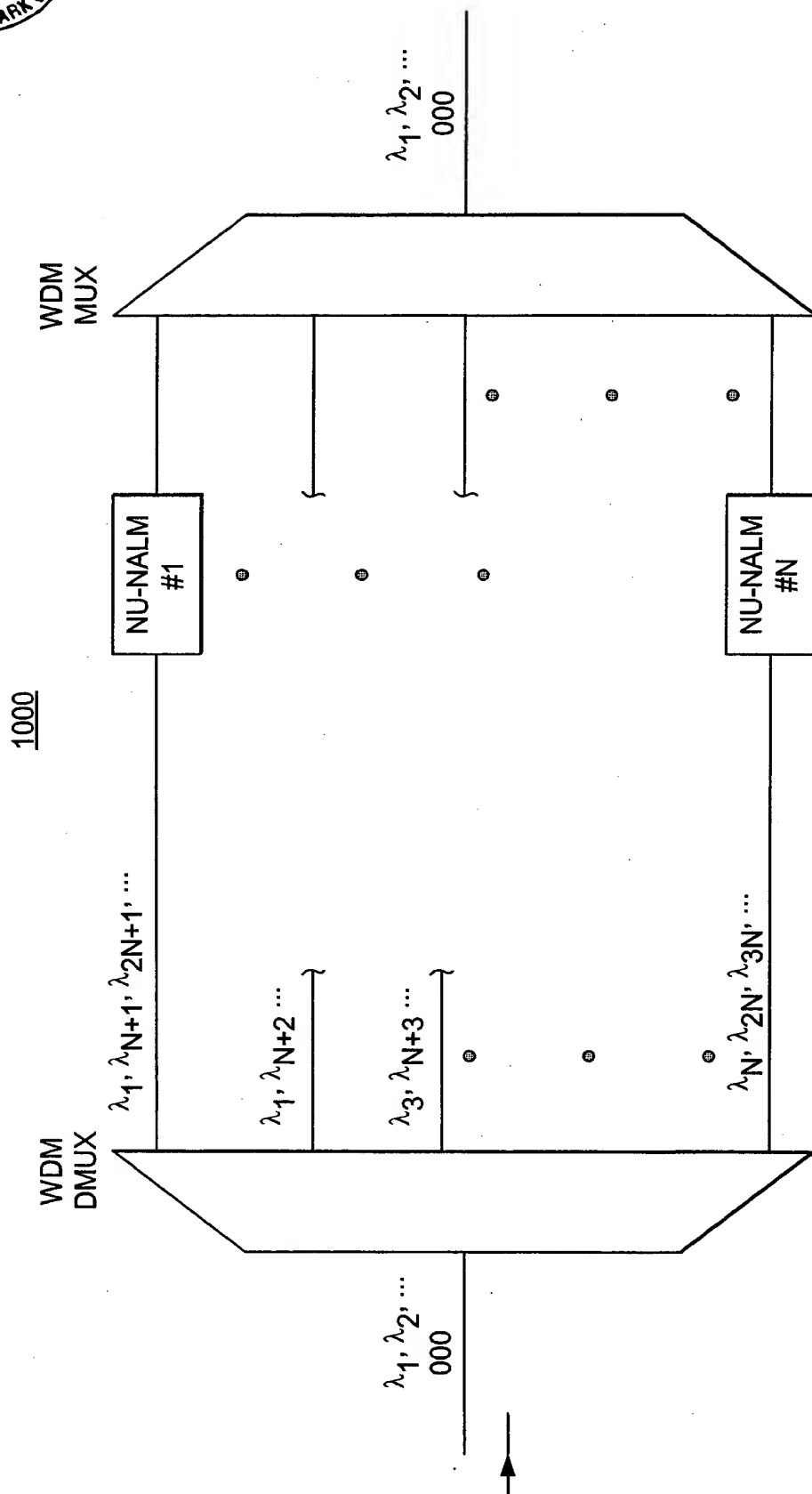


FIG. 10

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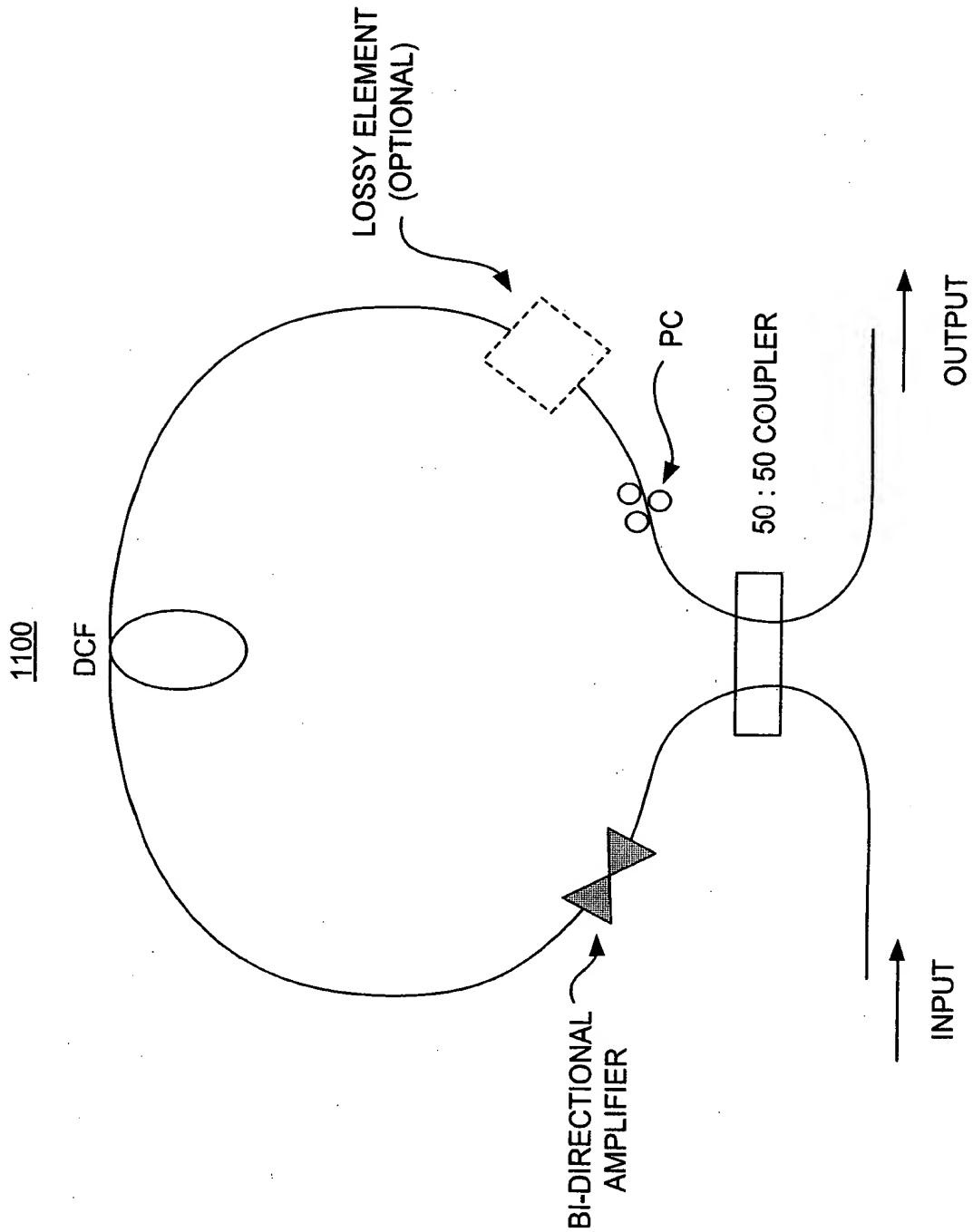


FIG. 11



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1200

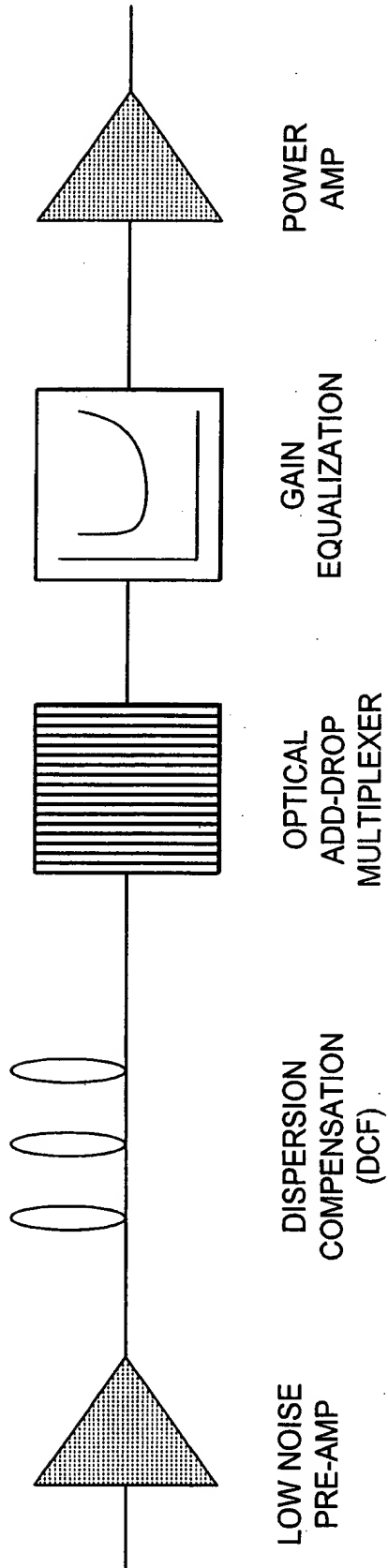


FIG. 12



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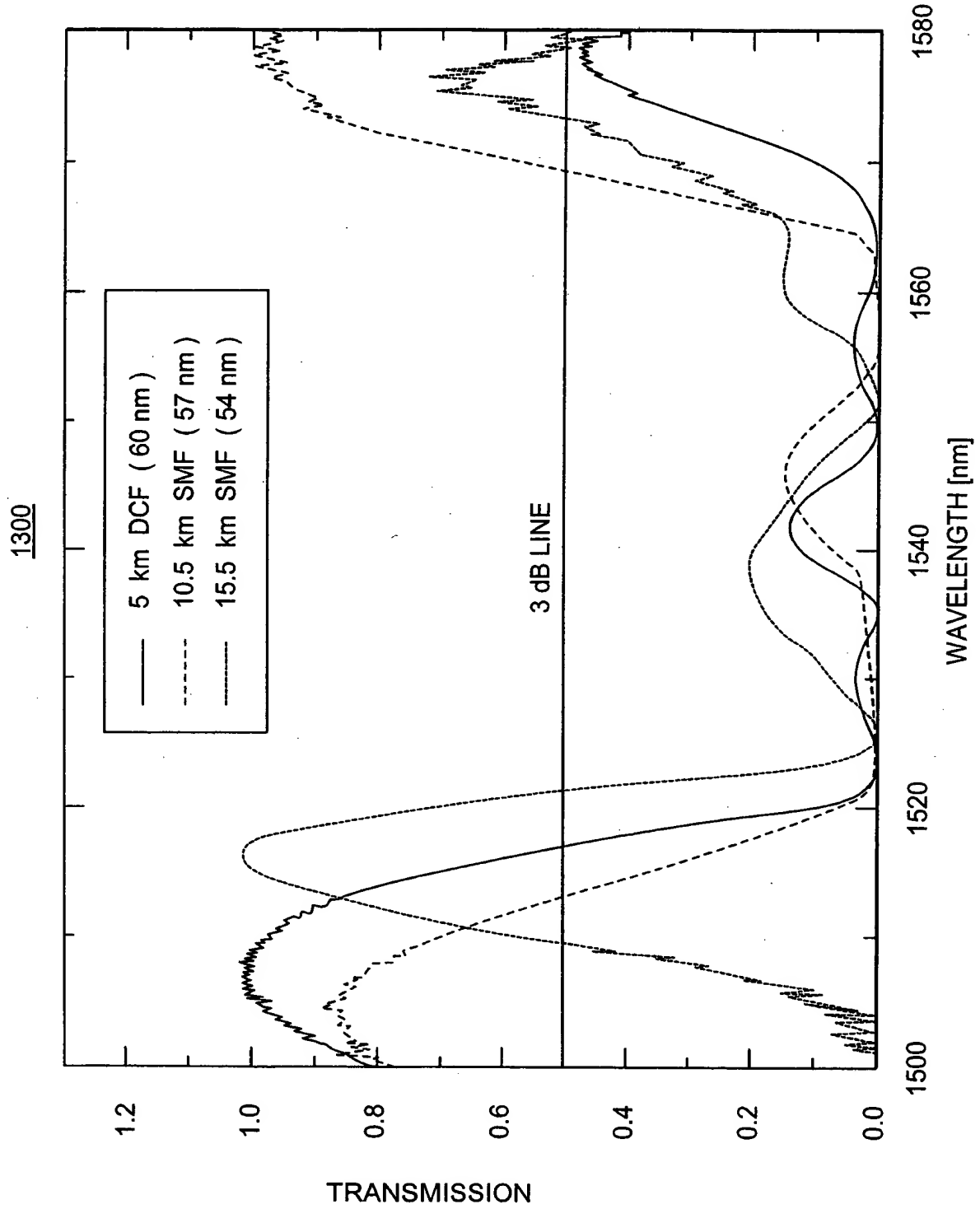


FIG. 13



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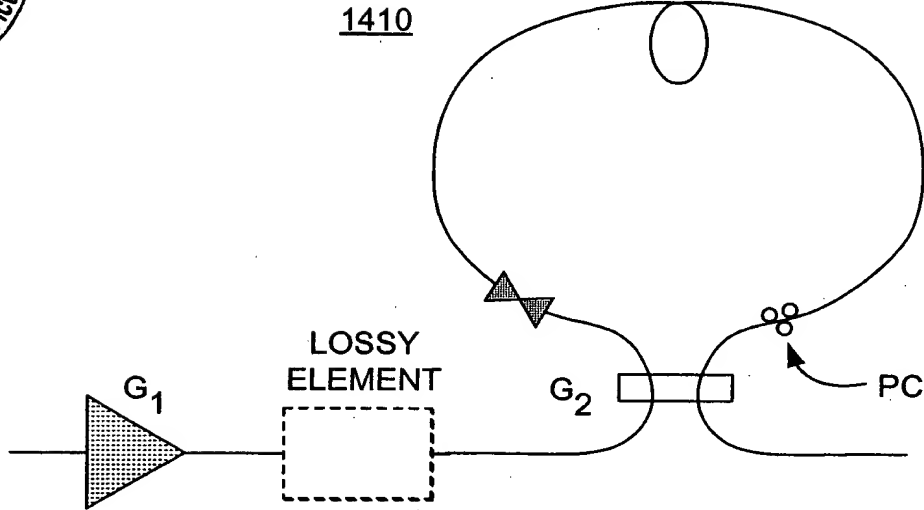


FIG. 14A

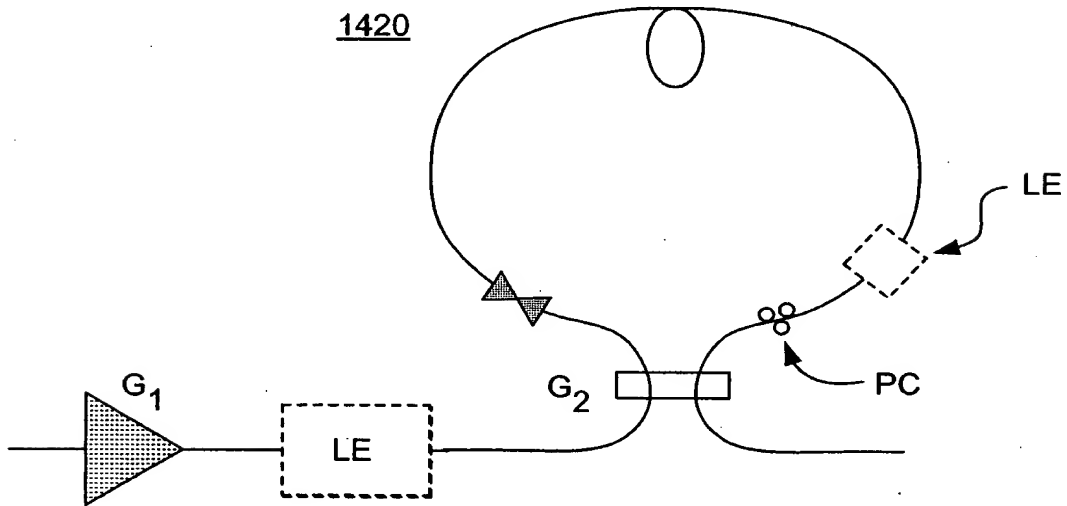


FIG. 14B

1430

P_{in} (dBm)	G_1 (dB)	G_2 (dB)	P_{out} (dBm)
-11	0	30	9.18
-11	5	25	9.17
-11	10	20	9.16
-11	15	15	9.10

FIG. 14C



1500

CIRCULATOR

OPTICAL AMPLIFIER

CIRCULATOR

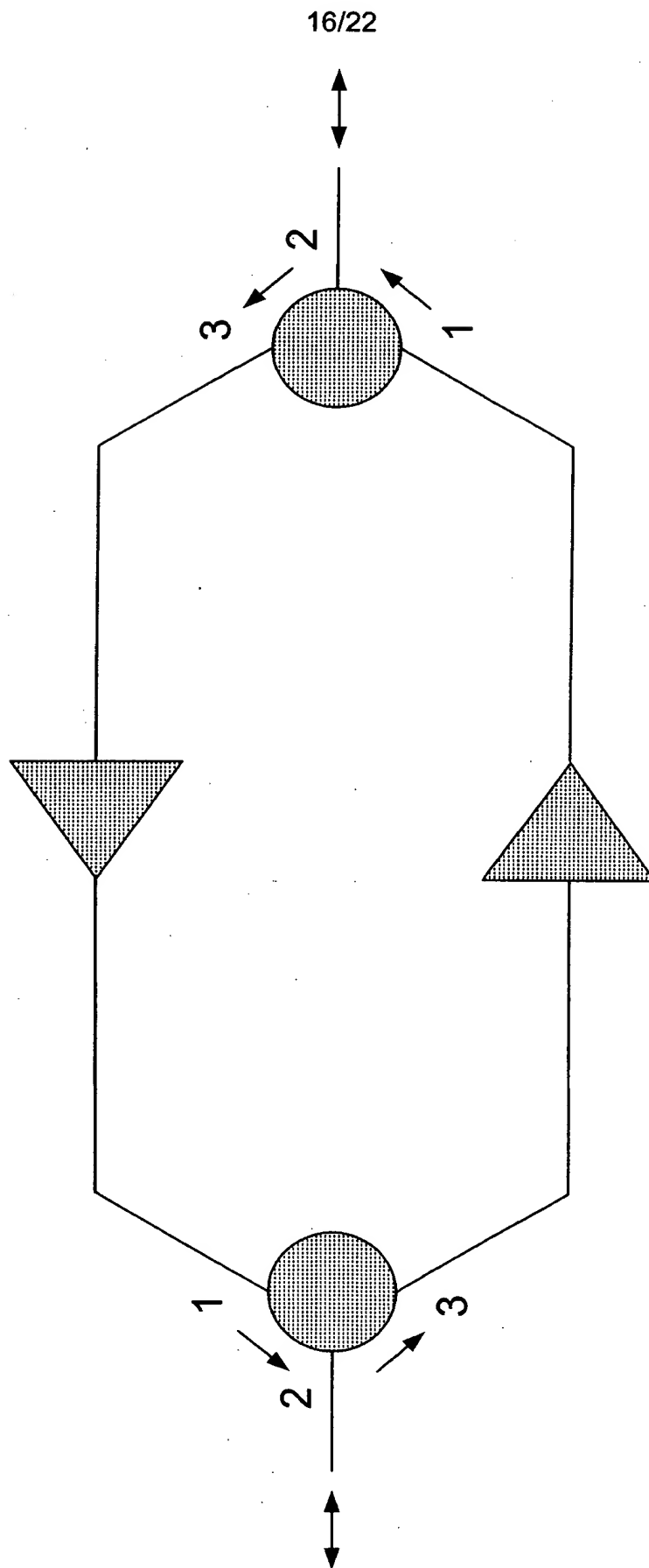


FIG. 15



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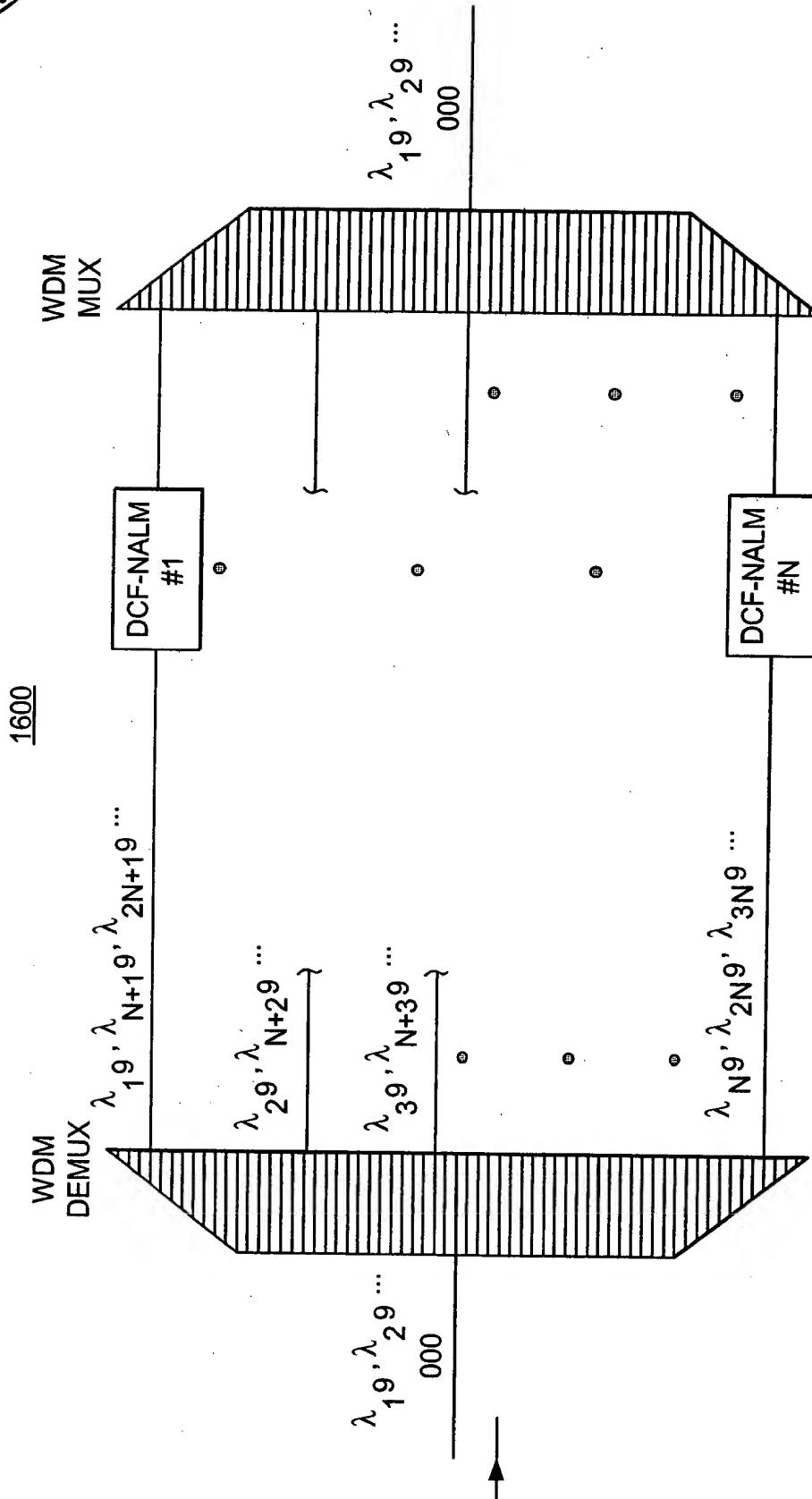


FIG. 16



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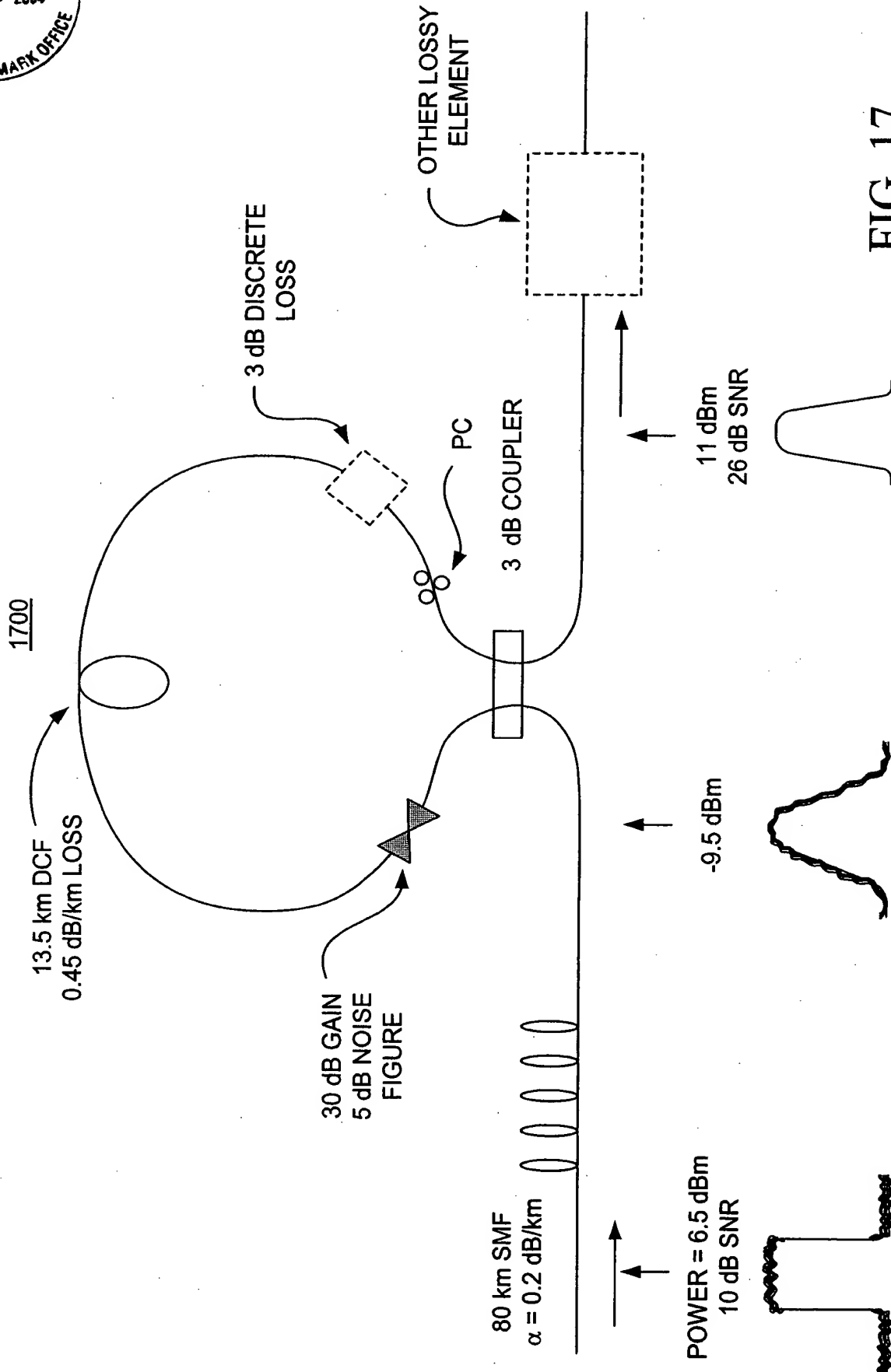


FIG. 17

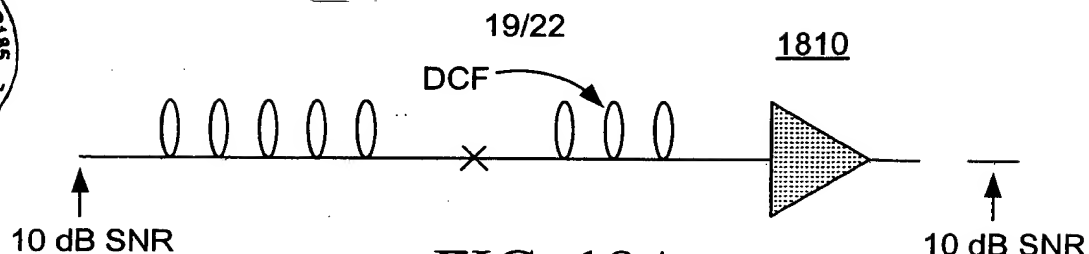
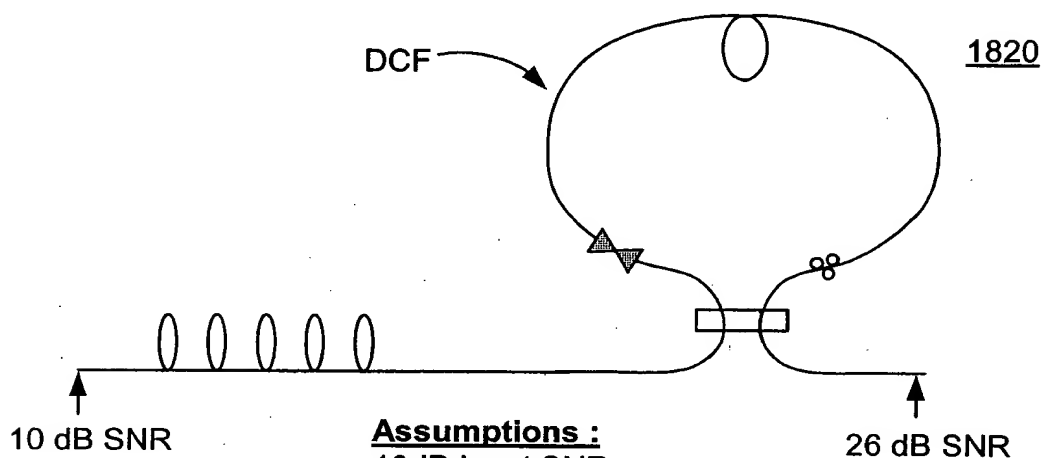


FIG. 18A



Assumptions :
 -10dB input SNR
 (5 GHz bandwidth)
 -5 dB amplifier NF

Results :
 16 dB improvement in SNR

FIG. 18B

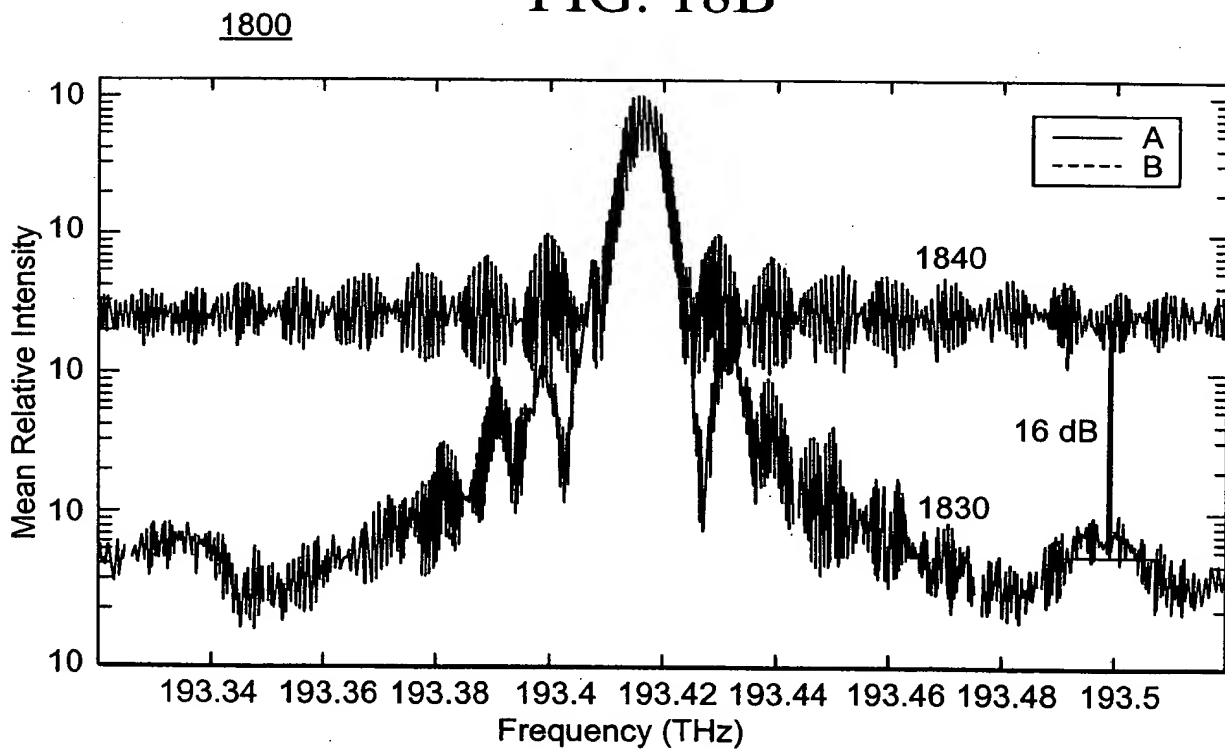


FIG. 18C

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1900

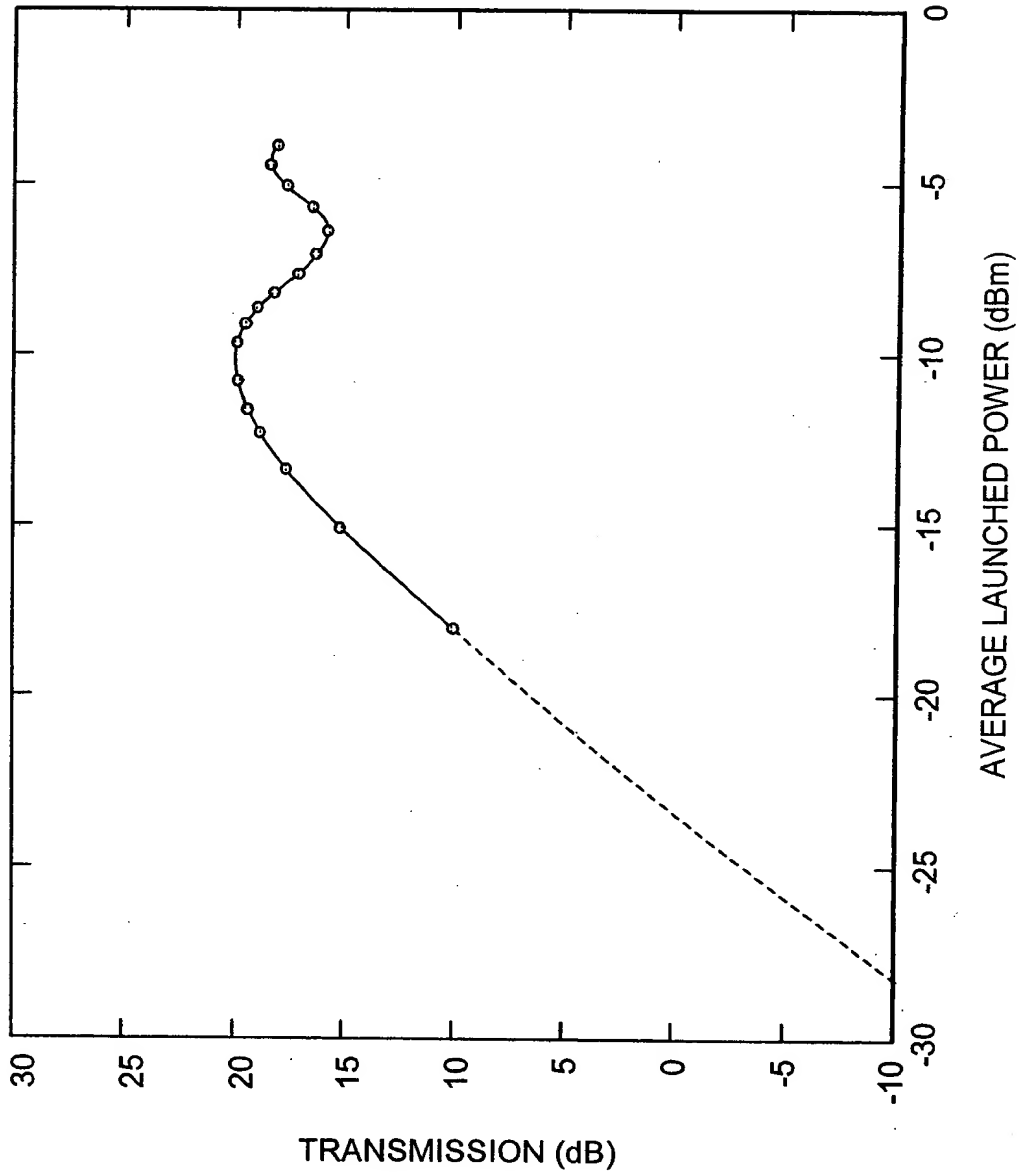


FIG. 19



2000

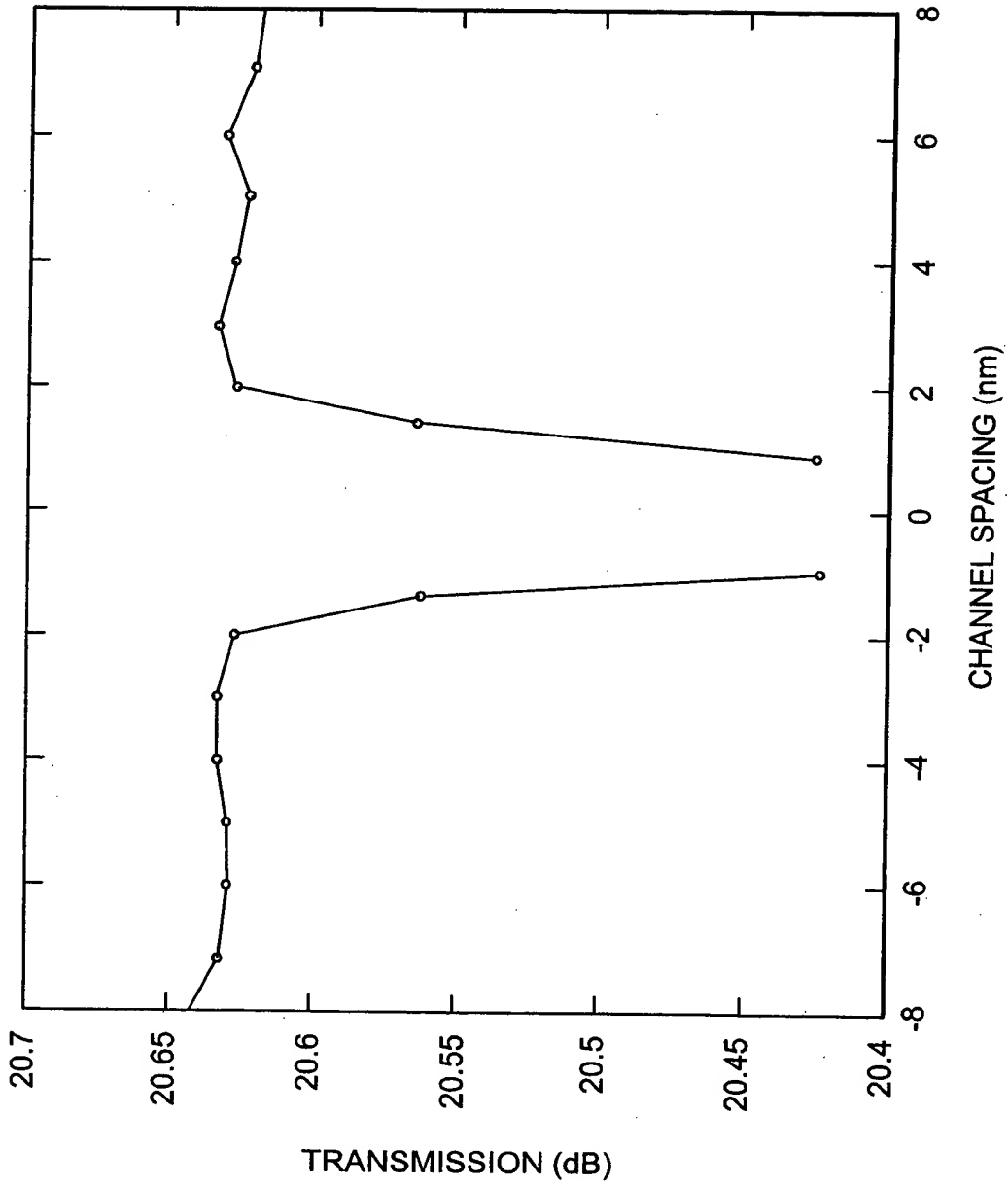


FIG. 20

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2100

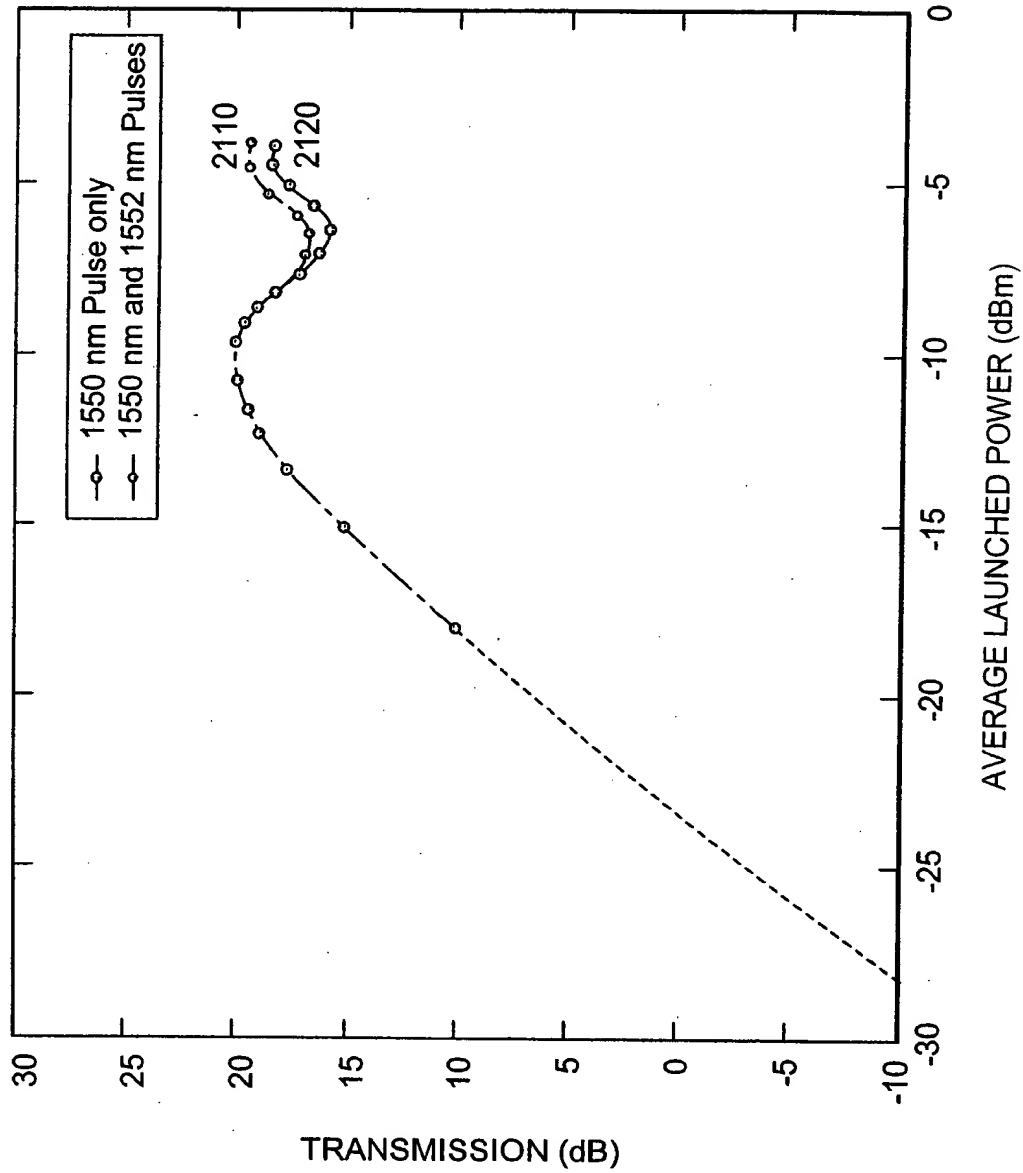


FIG. 21